

10 Surgical correction of presbyopia and hyperopia by a circularly distributed
assembly of mini-bridges implanted between the interior surfaces of the ciliary
muscle and the exterior surface of the lens capsule, for augmenting the
transmission of the contraction force of the ciliary muscle/zonule assembly to the
lens capsule. The lens is symmetrically squeezed by mini-bridges acting in
15 concert with the ciliary muscle thus changing the curvature of the lens. The mini-
bridges are composite synthetic muscles comprising either passive biocompatible
mini-bridges made with polymeric gels, silicone polymers or a composite,
electromagnetically or mechanically deployable mini-bridges, inflatable balloons
or synthetic muscles. The surgical procedure comprises using a ciliary muscle
20 relaxant to stretch the lens/zonules/ciliary muscle assembly. An ultrasonic
biomicroscope (UBM) is then used to enable the surgeon to see the area for
implantation and the mini-bridges and thus perform endoscopic or incisional
surgery to implant the mini-bridges in and around zonular cavities.